Volunteer Lake Assessment Program Individual Lake Reports

ARMINGTON LAKE, PIERMONT, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,368	**Max. Depth (m):**	10.3	**Flushing Rate (yr^{-1}):**	1.5
Surface Area (Ac.):	142	**Mean Depth (m):**	3.9	**P Retention Coef:**	0.63
Shore Length (m):	4,500	**Volume (m^3):**	2,340,500	**Elevation (ft):**	1334

TROPHIC CLASSIFICATION

Year	Trophic class
2005	OLIGOTROPHIC
2007	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

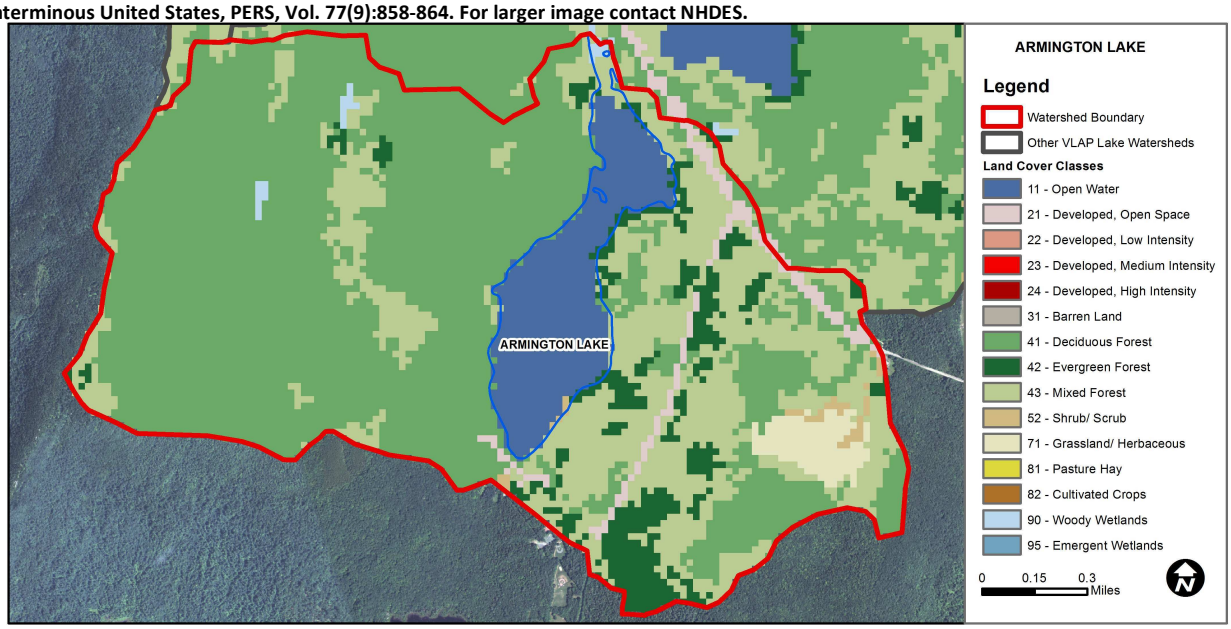
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Very Good	The calculated median is from 5 or more samples and is <= 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Chlorophyll-a	Very Good	The calculated median is from 5 or more samples and is <= 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

LAKE ARMINGTON - CAMP WALT WHITMAN BEACH	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	8.87	Barren Land	0	Grassland/Herbaceous	1.86
Developed-Open Space	1.96	Deciduous Forest	55.85	Pasture Hay	0
Developed-Low Intensity	0	Evergreen Forest	6.58	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	23.81	Woody Wetlands	0.36
Developed-High Intensity	0	Shrub-Scrub	0.57	Emergent Wetlands	0

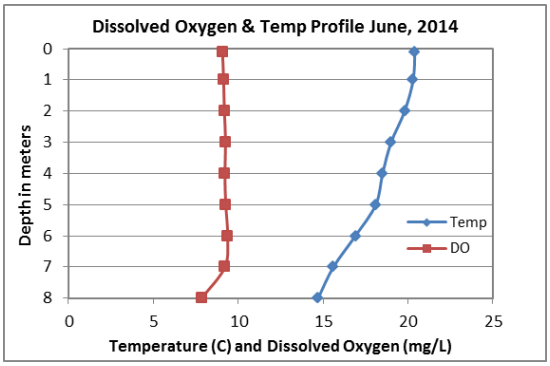
Volunteer Lake Assessment Program Individual Lake Reports

Armington Lake, Piermont

2014 Data Summary

Observations and Recommendations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels were low in June and July but spiked to slightly elevated levels in August, and the average chlorophyll level was the highest measured since 1990. However, the 2014 average was less than the state median. Monitors noted cloudy water conditions in August which may have been due to the elevated algal growth. Historical trend analysis indicates highly variable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Deep spot and tributary conductivity levels remained low, were less than the state median, and decreased in 2014 from slightly higher levels measured between 2010 and 2013. Historical trend analysis indicates stable epilimnetic (upper water layer) conductivity levels since monitoring began.
- **E. coli:** E. coli levels at all stations were very low and much less than the state standards for public beaches (88 cts/100 mL) and surface waters (406 cts/100 mL).
- **Total Phosphorus:** Epilimnetic and hypolimnetic (lower water layer) phosphorus levels remained low and much less than the state median on each sampling event. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus since monitoring began. We hope to see this continue! Inlet and Outlet phosphorus levels also remained low in July and August.
- **Transparency:** Transparency was low in June due to high winds and wave action, improved in July and then decreased slightly in August when algal growth was elevated. Average transparency remained much better than the state median and historical trend analysis indicates stable transparency since monitoring began.
- **Turbidity:** Deep spot and tributary turbidities remained low on each sampling event.
- **pH:** Epilimnetic pH was within the desirable range 6.5—8.0 units, however hypolimnetic pH tends to drop below the desirable range. Historical trend analysis indicates highly variable epilimnetic pH since monitoring began.
- **Recommended Actions:** Overall water quality has remained in a good range since monitoring began and trends are either improving or stable. This is a great sign and we applaud watershed management efforts to maintain a healthy system. Epilimnetic pH levels have improved since 2009 and we hope that this will continue as a result of efforts to decrease air pollutants in the region. Keep up the great work!



NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

Station Name	Table 1. 2014 Average Water Quality Data for ARMINGTON LAKE								
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	3.63	3.35	25.1		3	5.77	6.72	0.67	6.72
Hypolimnion			25.1		5			0.80	6.55
Site 1				10					
Site 2b				20					
Site 4				20					
Site 4a				10					
Site 6				20					
Site 6h				10					
Inlet			14.0		5			0.24	5.78
Inlet Left			25.3		5			0.79	6.62
Outlet			36.7		4			0.59	6.47

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data show low variability.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data highly variable.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Improving	Data significantly decreasing.